



# Making the Web *Friendlier* for Lower- Literacy Users

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It is harder for many American adults to read than you might think. The National Adult Literacy Survey (conducted in 2003 by the U.S. Department of Education) estimates that up to 23 percent of the U.S. population struggles enough with literacy that they have difficulty completing everyday tasks. Nearly 50 percent of adults, or 90 million people in the U.S., read at the eighth grade level or below. Most Web sites are written at the twelfth grade level or above.

More and more government services, health, and job information is moving online. Clearly, some of the users who need this information have limited literacy skills as well as lower incomes.

The authors of this article are involved in usability issues, and have been involved in research on Web usability for lower-literacy users for the past two years, in both industry and university-based studies. Our research has demonstrated that the Web can be an unfriendly place for this group. These users face severe challenges in

- Using search engines to find desired content
- Navigating to desired information on individual sites
- Reading content when—or if—they find it

Fortunately, there are techniques to help lower-literacy users get more out of their Web experience. And these techniques do not violate the principles of Web design for other users.



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## Research

Part of what makes accessing the Web difficult for low-literacy users is the fact that using a computer isn't intuitive or easy. People have to learn to use a mouse. They need to know how to get online. Someone has to tell them about links. They have to find out what to do on a search or a portal page. Community centers that provide computer training are very familiar with how overwhelming these tasks can seem to a new computer user. A study reported in 2002 by Christina Zarcadoolas, Mercedes Blanco, John Boyer, and Andrew Pleasant in the *Journal of Health Communications* found that such issues are fundamental to understanding why less literate persons are less likely to be online.

But for lower-literacy users who manage to overcome all these initial barriers to entry, the content on most Web pages poses serious challenges. In our research over the past year, we focused on how to make the text on the screen more usable and accessible for these users. We wanted

to explore the reading strategies used by lower- and average-literacy users. And we wanted to know what content, navigation, and text design approaches would support these strategies.

Finding lower-literacy participants who can and do use the Web is a fairly tall order. In part, this situation is due to the innate difficulty of using a computer. However, after watching more than thirty lower-literacy participants use the Web, we strongly believe that the poor usability of the Web for this group is the real explanation for our recruiting difficulties.

We watched participants with a range of literacy levels perform tasks that included both user-directed and moderator-directed reading activities. Some activities involved unconstrained browsing, site-constrained browsing, and page-constrained browsing.

The most obvious suggestion for preparing Web content for an audience that may include lower-literacy participants is to write text at a lower reading level. We found that it's perfectly possible to rewrite

most text acceptably using relatively short sentences and short, familiar words. Readability is affected more by the familiarity of words than by their length—and familiar words are more usable for everybody.

We also observed a range of significant behaviors and reading strategies among lower-literacy participants that can dramatically affect their success on the Web.

## Avoiding Search

It's hard to find information on the Web without using a search engine, and on many sites, it's hard to find information without using an intra-site search. But lower-literacy users sometimes go to extreme lengths to avoid searching. We saw one user, trying to find a particular DVD on *walmart.com*, spend thirty minutes browsing through various categories and scrolling through pages and pages of DVD listings.

Search requires spelling, and not all search engines can deal with spelling errors. And the format of search results makes them difficult for lower-literacy users to process. For example, Google's search results page (Figure 1) is a text-heavy list of page titles, which frequently contain confusing or extraneous words, text excerpts pulled from page content that are often not even complete sentences, and funny-looking, hard-to-read URLs.

Lower-literacy users, if forced to use search, would typically ignore all text except the page titles, and would click on the page title that appeared first in the results or that looked simple and matched their search string most closely.

Site designers can't control how Google displays their site's entry in its search results. The only thing designers can do about this problem is to use clean, simple page titles.

Site designers *can* control intra-site search results. Designers creating an intra-site search should

- Use simple page titles, in a larger type size for easy reading
- Visually de-emphasize URLs, and avoid including them if possible
- Compensate for common misspellings
- Use lots of white space
- Provide short, focused annotations for each result using short, familiar words and simple sentence structures
- Sharply limit the number of results displayed on a page

## Reading Every Word

Scanning is hard for lower-literacy

users. Reading itself takes a great deal of concentration and effort. These users can't grasp the structure of the page at a glance by reading headings and sub-headings. Some lower-literacy users compensated by reading every word on the page so that they didn't "miss" the answer. (Similar thorough reading has been reported among older users and unexperienced Web users.)

## Skipping Chunks of Text

When confronted by long, dense pages of text, some lower-literacy users simply skip chunks of text. Ironically, these users would sometimes end up skipping over the very content they wanted—even if the target content was signaled by a heading, a

well-chunked paragraph, or a bulleted list. This skipping was not the same as the scanning behaviors more literate users employ—on long pages with multiple paragraphs, the lower-literacy users would often skip right over headings and lists to land in the middle of a paragraph.

Skipping seemed to be triggered most often by

- Long paragraphs of dense text
- Long sentences with complex syntax
- Long pages requiring scrolling
- Numbers in the text
- Difficult, long, or unfamiliar words
- Parenthetical text

## Hopping Between Links

Some low-literacy users tried to minimize reading by focusing on finding links instead of reading content. These users skipped from link to link throughout the site, often ignoring page content completely. When asked, they said they were hoping to arrive at more focused information. Users who relied on this strategy sometimes landed on pages

Figure 1. Google's search results page (from [www.google.com/search?hl=en&ie=UTF-8&oe=UTF-8&q=statins](http://www.google.com/search?hl=en&ie=UTF-8&oe=UTF-8&q=statins)).



Figure 2. Guided paths help users stay oriented as they move through site content (from [nihseniorhealth.gov/arthritis/symptomsanddiagnosis/02.html](http://nihseniorhealth.gov/arthritis/symptomsanddiagnosis/02.html)).



with their desired content but failed to see it. Such users had very low success rates.

Usability for lower-literacy users can be dramatically improved by

- Limiting the number of links per page
- Keeping site hierarchies fairly flat and shallow
- Providing guided paths through the content (see Figure 2)

### Leaving Quickly

Because looking for additional information requires more reading, lower-literacy users tend to decide quickly that they have enough information. In practice, this frequently meant that they settled for answers that were incomplete or even misleadingly vague. Marketing-speak was particularly difficult for such readers to process. Lower-literacy users had more success on sites that kept content short and to the point, but even on these sites they stopped reading long before their more literate counterparts. Therefore, the most important information needs to appear first in its context—whether on a page, in a paragraph, or in a list.

### Focusing on a Narrow Field

Lower-literacy users and some older users are less able to pay attention to cues about what might be coming up or remember where they came from because processing the text itself takes so much cognitive attention. As a result, they have an especially narrow field of view—as they move through page content, they are not “looking” ahead or behind, so they are not likely to notice any content above, below, or to the sides of their focus of attention.

Given this narrow field of view, it is crucial that headings make sense out of context, and that pages make sense independently. Even adjacent paragraphs should be as independent as possible. If paragraphs cannot be understood without remembering the content of the previous paragraph, some low-literacy users are likely to walk away with misinformation. (The Web page in Figure 3 violates this guideline; the one in Figure 4 adheres to it.)

We also found that lower-literacy users were distracted and often derailed by content and links that were pulled out into the right margin. They had better success when content appeared only in one main column.

**Figure 3.** This design is likely to confuse lower-literacy users (from [www.americanheart.org/presenter.jhtml?identifier=3006030](http://www.americanheart.org/presenter.jhtml?identifier=3006030)).



**Figure 4.** Lower-literacy users may find this design easier to use (from [www.zoloft.com/index.asp?pageid=3](http://www.zoloft.com/index.asp?pageid=3)).



### Conclusion

According to a July 2003 report from the The Pew Internet and American Life Project, the three primary reasons for going online are to use e-mail (93 percent), research a product or service before purchasing it (83 percent), and search for health information (80 percent). Naturally, reduced access to or limited understanding of health information can dramatically affect health care outcomes and costs. As government services move online, they may become less accessible to the very constituents who need them most. It is urgent that Web site designers learn to support the needs of lower-literacy users.

Fortunately, adapting to the needs of lower-literacy users need not result in a

Web site that feels condescending. The strategies we have examined have the potential to increase usability for all users without reducing user satisfaction. **1**

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*The authors, who are siblings, are also co-authors of Creating Web Sites That Work, recently published by Houghton-Mifflin.*

# 2004-05

# Seminar Calendar



## June

### June 9:

Neil Perlin

*'Ready, Fire, Aim' No More — Creating Effective Documentation Specifications*

**Audience:** Beginner/Intermediate

### June 23:

JoAnn Hackos

*Are You Ready for Content Management and Structured Authoring: Managing the Change*

**Audience:** Advanced

## July

### July 21:

Saul Carliner

*Seven Ideas for Sprucing Up Help*

**Audience:** Intermediate

## August

### August 4:

Ann-Marie Grissino

*Practical Strategies for Developing Online Courses*

**Audience:** Beginner/Intermediate

### August 18:

Leah Guren

*Chapter 1: Writing Effective Introductions and Overviews*

**Audience:** Beginner/Intermediate

## September

### September 15:

Char James-Tanney

*Cascading Style Sheets: Learning the Basics (Part 1)*

**Audience:** Beginner/Intermediate

### September 29:

Char James-Tanney

*Cascading Style Sheets: Creating Layouts without Tables (Part 2)*

**Audience:** Beginner/Intermediate

## October

### October 6:

Dana Chisnell/Amy Lee

*Communicating with Older Audiences*

**Audience:** Intermediate

### October 20:

Seth Maislin

*A Brief, Comprehensive Indexing Primer*

**Audience:** Beginner

## November

### November 10:

Char James-Tanney

*Introducing Windows 'Longhorn' Help*

**Audience:** All levels

## December

### December 8:

Leah Guren

*Highlighting Hazards: Mastering Warnings and Error Messages*

**Audience:** All levels

## January

## 2005

### January 12:

John Hedtke

*Preemptive Project Planning*

**Audience:** Intermediate/Advanced

### January 26:

Thomas White

*A Pound of Salt, A Pint of Blood—Getting the Most Out of Your Contractors to Ensure Project Success*

**Audience:** All levels

**For detailed descriptions of the seminars, as well as the latest updates, visit [www.stc.org](http://www.stc.org).**